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On the use of Qualitative Comparative Analysis in management

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Abstract

Researchers now use Qualitative Comparative Analysis (QCA) beyond its original purposes in political and sociological sciences and apply this method of analysis in the field of management. This article offers a comprehensive and critical review of all the uses of QCA in management studies up until February 2015. This study shows how QCA extends beyond an empirical technique and how this method offers a genuine formalization of qualitative analysis, which opens new ways of knowledge production in management scholarship. This also study provides important implications for business management research.

Keywords: Qualitative Comparative Analysis (QCA); management; organization; crisp-set; fuzzy-set, multi-value

1. Introduction

The Qualitative Comparative Analysis (QCA) derives from the classical comparative methods that John Stuart Mill theorizes in 1843. Ragin (1987) develops and popularizes the method in his seminal work. The QCA is a tool and approach for researchers who want to find a balance between case-oriented and variable-oriented analysis (De Meur & Rihoux, 2002). The QCA constitutes a useful analytical method for cross-case analysis (Miles & Huberman, 2003) that focuses on the complexity that characterizes the cases under investigation. Cases are configurations of variables; this definition has a dual purpose: First, these configurations reveal the trajectories and paths that variables follow to achieve similar or different results. Second, these configurations provide explanatory paths with complex causality and where combination of factors explains a research result. QCA is also an approach as well as a research technique (Curchod, 2003; Rihoux & Marx, 2013). In this regard, QCA aids in the identification of causal structures (Ragin, 1987). QCA is therefore an instrumentation of generic analytical approaches for which qualitative methodologists advocate (Miles & Huberman, 2003).

QCA draws on Boolean algebra and set-theoretic approaches, and operates through two types of software: those based on graphical user interface (GUI) (e.g., TOSMANA, and fsQCA) and those based on command line interface (CLI) (e.g., R, and Stata packages). The areas of research that use QCA are mostly political sciences and sociology (Rihoux et al., 2013). However, although management research increasingly uses QCA, this method still remains relatively new to a large number of scholars and no critical review and overview on its use in management research exists.

Hence, the contribution of this article is twofold. First, this study is the first comprehensive analysis of the use of QCA in management research (up until February 2015). This attempt thus helps to structure the literature for existing and potential QCA users.

Second, by organizing the field, the study identifies current management issues of interest and how researchers investigate these issues through QCA. This discussion shows how QCA extends beyond an empirical technique, and offers a genuine formalization of qualitative analysis, which opens new ways of knowledge production in management scholarship.

Following this introduction, the next section explains the research method for this study. Section 3 presents the main issues that management research studies through QCA and the main contributions to the literature. The last section comprises conclusions and presents some implications for future studies.

2. Research method: A content analysis

2.1. Delimiting the scope of the investigation

This study first identified management articles using QCA in Web of Science database and then triangulated the results with the COMPASS database. The final sample comprised 95 articles from aggregated databases (Cairn, Ebsco and Science Direct) and publishers (Sage and Emerald) (see Figure 1). To obtain the articles, the study used six sets of keywords. The first set combined the themes “Qualitative Comparative Analysis”, “QCA” and “Management”. From this combination, the second, third, fourth, fifth and sixth used “Fuzzy-set”, “fsQCA”, “mvQCA”, “Crisp-set”, and “csQCA” respectively instead of “QCA”.

2.2. Coding methods for data reduction

The study developed a theme dictionary (Figure 2). The review, the object of research and the research objective helped to identify management areas of interest. This study assessed whether researchers use QCA for its intrinsic value (i.e., extending the understanding of management practices) and/or instrumentally, that is, for its extrinsic value (the interest of the management phenomenon is secondary). Finally, regarding the scope of an article, this

study assessed to which extent researchers add new theoretical perspectives to the area of research.

Figure 1 here.

QCA comprises three variants: crisp-set, multi-value and fuzzy-set. This research considers as types of studies: empirical, theoretical, and methodological studies. Regarding cases, this study inductively identified four attributes for type of cases: country, organization, individual, or other types of cases that do not fit in the first three categories.

Figure 2 here.

3. Anatomy of investigated management phenomenon

Researchers use QCA mainly to investigate four major management objects across eleven research domains (see Figure 3), with an underlying primary mode of generation of knowledge (i.e., test of existing theories).

3.1. Underlying order of the diverse usage of QCA in management

Results show that management researchers use QCA mostly to study four issues (see Figure 4). Figure 5 indicates that combining QCA with other conventional methods is more frequent than the use of QCA by itself; fuzzy-set methods are the most habitual. Figure 6 shows that the use of QCA in management involves diverse units of analysis.

Figure 3 here.

Figure 4 here.

Figure 5 here.

Figure 6 here.

3.1.1. Internal processes and organizational structures

Researchers generally focus on four aspects when studying the internal environment of an organization: processes, actors and their actions; industry and organization structure; influence of organizational structure on the actors; and performance.

Regarding processes, studies such as management-practices adoption and innovation (Ganter & Hecker, 2013) are focal points. Actors' actions and their consequences in organizational processes are equally important (Young & Poon, 2013).

Regarding industry and organization structure, studies concentrate on industry development, the effect of structural changes, conditions for the organizations' sustainability, and specification of organizational forms (García-Castro & Casasola, 2011). For the influence of organizational structure on actors, researchers focus mainly on the analysis of the workplace (Chang & Cheng, 2013). Finally, research focuses on performance at a national, industry and/or organizational level (Stanko & Olleros, 2013).

3.1.2. Organizational external environment

Researchers examine organizations' external environment from two perspectives. First, researchers attempt to understand the behavior of organization's external actors, particularly consumers (Kent, 2005; Woodside et al., 2011). Second, studies examine and update capitalism literature by increasing diversity and coverage of research. Here, QCA appears as a means to refine existing typologies (Judge et al., 2014).

3.1.3. Overlaps within and between organizational environments

Management deals with three main streams of research in this category. First, the identification of the conditions for successful innovation and knowledge transfer constitutes one of the main research objects. In addition, the nature of inter-organizational relationship,

management capacity and organizational compatibility (Leischnig et al., 2013), and absorption capacity of the organization are also relevant. The emergence of forms of inter-organizational relationship (Chung, 2001) and relational dynamics are two other research objects in this first stream (Tóth et al., 2014).

Second, the competitive position of the organization or how the dynamics of the organization's external environment shapes organizational behavior (Järvinen et al., 2009). Other studies focus on organizational reactions to external actors' demands (Ordanini & Maglio, 2009) or pressures that external institutions exert (Maggetti, 2014).

Third, researchers strive to explain the characteristics of national economies (Allen & Aldred, 2011; Freitag & Schlicht, 2009), and organizational external actors' behavior, which includes investors and consumers (Bell et al., 2014).

3.1.4. Promoting a methodological alternative

Promoting QCA in management research mainly operates in four distinct but complementary ways. First, by familiarizing the management research community with the benefits of using QCA to understand organizational phenomena (Curchod, 2003). Second, by highlighting the relevance of the use of QCA in specific management domains such as marketing (Kent, 2009a; 2009b; Woodside & Zhang, 2012), public management (Kitchener et al., 2002), leadership (Ford et al., 2013), B to B decision-making (Woodside & Baxter, 2013), and configurations/typologies of organizations (Fiss, 2007; 2011). Third, by identifying the specificities of QCA's own empirical processes (Duşa, 2007; Woodside, 2011; Woodside et al., 2012). The fourth category deals with the need to legitimize the use of QCA by contrasting this method with management literature's traditional empirical methods. Although the QCA is half-way between quantitative and qualitative methods (De Meur & Rihoux, 2002), research usually contrasts QCA with quantitative (Kent & Argouslidis 2005;

Woodside, 2010; 2013) rather than with qualitative methods (Öz, 2004; Woodside et al., 2012). The fact that researchers increasingly use QCA to analyze large-N although this method's original purpose was to analyze small-N could explain this tendency (Greckhamer et al., 2013; Fiss et al., 2013).

3.2. *Forms of knowledge generation*

The generation of knowledge can be the result of research that focuses either on theory or on practice (Dul & Hak, 2008). As this research only considers academic articles, the theoretical perspective is more prominent even though authors often include managerial implications of their research. In addition, QCA contributes to management research mostly by testing existing theories rather than creating new ones.

3.2.1. *New investigations of earlier hypotheses or propositions of existing theories*

The use of QCA can contribute to management knowledge by replicating earlier studies through the re-examination of data. Such studies aim to increase research validity (Aguilera-Caracuel et al., 2014), nuance (Woodside & Zhang, 2013), or question existing knowledge (Woodside & Baxter, 2013).

Another type of studies that use original data seeks a review of the links that existing theories commonly accept but do not investigate sufficiently. These studies contribute to knowledge by suggesting nuances to a deeper extent (e.g., Koll et al., 2005). Other studies contribute by testing existing theories (Kent, 2005). Some studies also present facts/evidences that settle an academic debate. Furthermore, some studies advocate for a specific theory among several competing ones (Allen & Aldred, 2011; Sager, 2004).

3.2.2. *Investigation of new hypotheses/propositions deriving from existing theories*

The QCA contributes to the generation of management knowledge also through the formulation of new sets of hypotheses within existing theories. Studies that fall into this category focus on identifying sufficient conditions that explain a specific management phenomenon. Commonly, these studies confirm (Kalleberg & Vaisey, 2005), complement (Vis et al., 2007) or provide more nuances to the existing knowledge (e.g., Moritz et al., 2011; Ordanini & Maglio, 2009). Other studies seek to confirm existing knowledge (Schneider et al., 2010).

3.2.3. *Exploration of new relationships between management phenomena*

Here researchers seek to contribute to management knowledge by attempting to build new theories through QCA to explain the links between management phenomena and theoretical causes (Verweij, 2015; Wu et al., 2014). In this vein, Fiss (2011), for example, constructs a theory of core and peripheral determinants of organizational causalities. Another way of contributing to management research is by introducing new management issues and investigating the causes (Tóth et al., 2014).

3.2.4. *Rekindling the heuristic of the management phenomenon*

If the aim of research in management is to support organizational decision-making, accesses to management realities are always a matter of debate in the management academic community. A part of these debates is whether to approach management realities through quantitative methods or through qualitative methods.

Assuming that knowledge assessment in management research revolves around the knowledge's generalization, accuracy and complexity, Woodside (2010b) points out that none of the two methods can individually satisfy those three evaluation criteria. Thus, the

promotion of QCA stresses that the validity of knowledge that emerges can derive from the combination of three evaluation criteria.

Within this debate, QCA helps to address some of the criticisms of qualitative (Öz, 2004; Woodside et al., 2012) and quantitative studies (Greckhamer et al., 2008; Kent, 2009a; 2009b; Woodside, 2011) by achieving better generalization and accuracy (Woodside, 2010). Paradoxically, QCA alone appears not to be sufficient to capture management issues. Therefore, researchers very often use QCA in combination with other traditional research methods. In addition, QCA helps to highlight the asymmetric nature (i.e., positive or negative instances of a management phenomenon that the same determinants cannot explain), as well as the configurational (i.e., positive or negative instances of a management phenomenon that isolated determinants do not explain) and causal complexities (i.e., management phenomenon determinants that link with complementarity and/or substitutability relations which vary according to the context) of a management phenomenon.

This comprehensive analysis also distinguishes some critical issues regarding the way researchers use QCA for management realities investigation. First, although QCA "sits midway between exploration and hypothesis-testing research" (Kent, 2005, p. 226), this research shows that researchers use QCA mostly to test management theories instead of using this method for exploratory analyses. Second, despite the systematic comparison of QCA with quantitative methods, the QCA has an original role in strengthening knowledge generation through a dialogue between case studies and theory. Third, Fiss (2007) emphasizes that QCA is helpful to limit the recurring mismatching between theory and methods in management research. That objective may be unachievable due to a large size of cases under investigation. Woodside and Baxter (2013) suggest between 5 and 50 as a number of cases to study, although many of the articles this study mentions deal with a large-N.

4. Discussion and conclusion

This study encourages scholars to renew the understanding of management realities. Indeed, QCA reveals that management realities comprise two forms of explanatory paths. First, this review highlights that a specific management reality may have a multiplicity of causal paths. Some researchers see management realities as a manifestation of the equifinality principle. In addition, some authors attempt to show that the knowledge about explanatory paths of a management reality does not always imply an understanding of the absence of its manifestation. This fact demonstrates the asymmetric nature of management phenomena (e.g., Verweij, 2015; Wu et al., 2014). However, the study of management phenomena mainly focuses on positive occurrences. These studies tend to emphasize the principle of equifinality while ignoring asymmetrical aspects of management phenomena (e.g., Järvinen et al., 2009; Woodside & Zhang, 2013). This perspective emphasizes that management phenomena vary in degree and nature.

Second, although the explanatory pluralism is a central approach to QCA, this research further suggests that not all management realities are subject to multiple explanatory paths (Stanko & Olleros, 2013; Vis et al., 2007; Woodside et al., 2011). This fact has implications for the equifinality principle.

Overall, these two forms of causal paths associate with managerial configurations and make more actionable the knowledge that QCA generates.

This article extends previous works on QCA's benefits to management (e.g., Curchod 2003; Fiss, 2007; 2011). The results suggest that researchers apply QCA to four management situations. The first relates to the internal environment of the organization; the second to the external environment; the third relates to the links within and between these environments; and the fourth situation deals with the optimal way to question management phenomena. In

most of the articles, the use of QCA serves an objective of renewing the understanding of management situations by means of a review of the existing theories.

This research has several implications for management research. First, general management and marketing are the areas that apply QCA the most. This finding is indicative of where future research should direct efforts. In addition, the QCA can offer new investigation opportunities in areas that already apply this method. Second, studies use QCA mostly to test existing theories, although this method could be appropriate for exploring contemporary management realities and/or developing new theories. Third, studies use two forms of QCA (i.e., crisp-set or csQCA and fuzzy-set or fsQCA) than the QCA in its multi-value form (mvQCA) to investigate management phenomena. This form of QCA could suit certain management realities as Verweij (2015) evidences. Fourth, QCA allows researchers to distinguish necessary and/or sufficient conditions for the occurrence of organizational phenomena, which could be useful in addressing a central criticism of management research: the lack of actionability. In this vein, the equifinal nature of some organizational outcomes may be beneficial to the managerial decision making. Fifth, QCA could help to better approximate some management realities that are difficult to measure (Viswanathan et al., 1996).

Overall, the use of QCA in management research highlights that the complexity of management phenomena contains parsimonious causal paths that research can unveil. Thus, QCA can improve the understanding of management realities while preserving their holistic nature.

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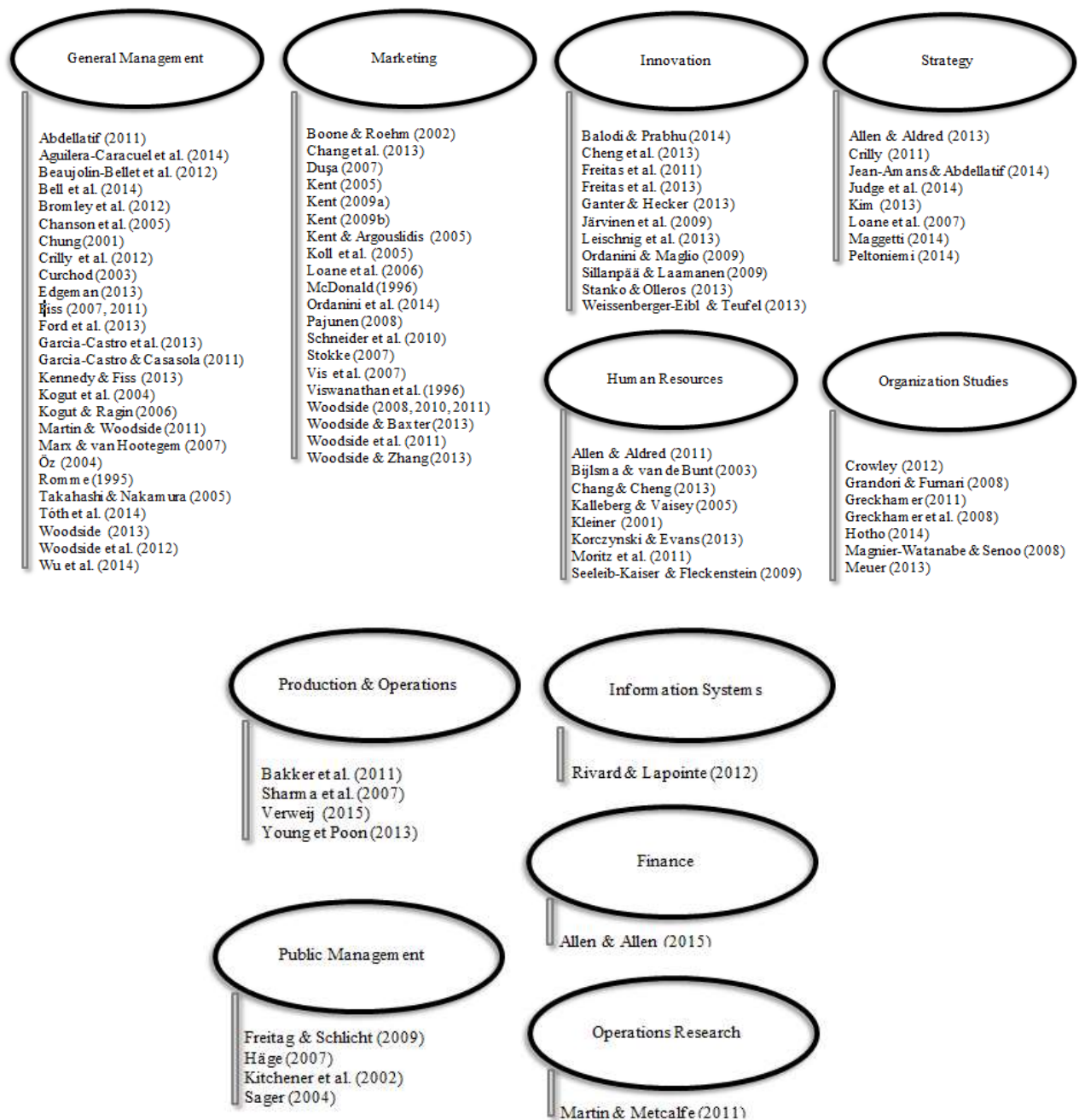
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Figure 1. Use of QCA in management



Note: This figure shows every article that this study analyzes. However, the reference section includes only those works that this article explicitly references.

Figure 2. Dictionary of themes for the articles analysis

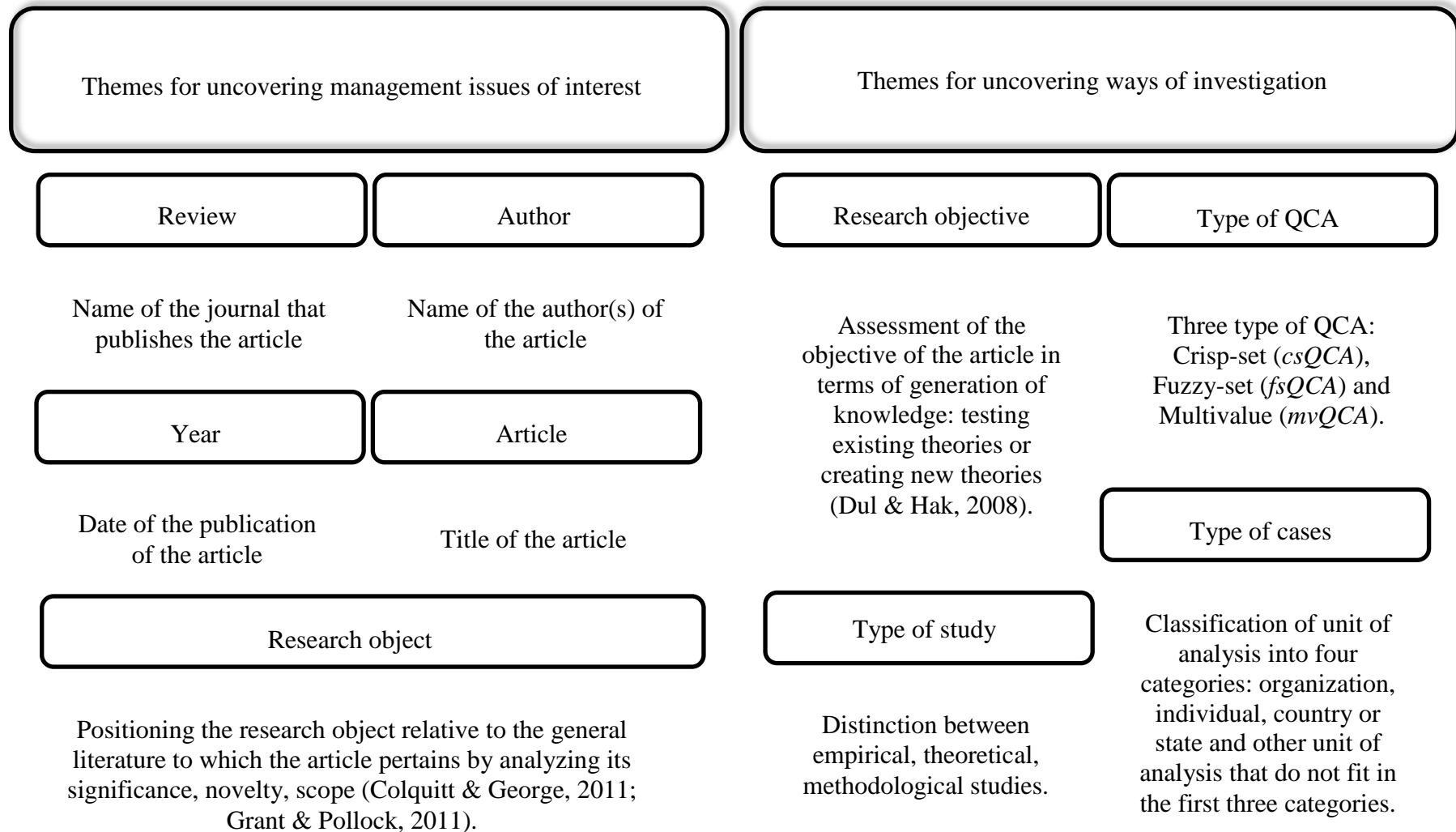


Figure 3. Management domain using QCA

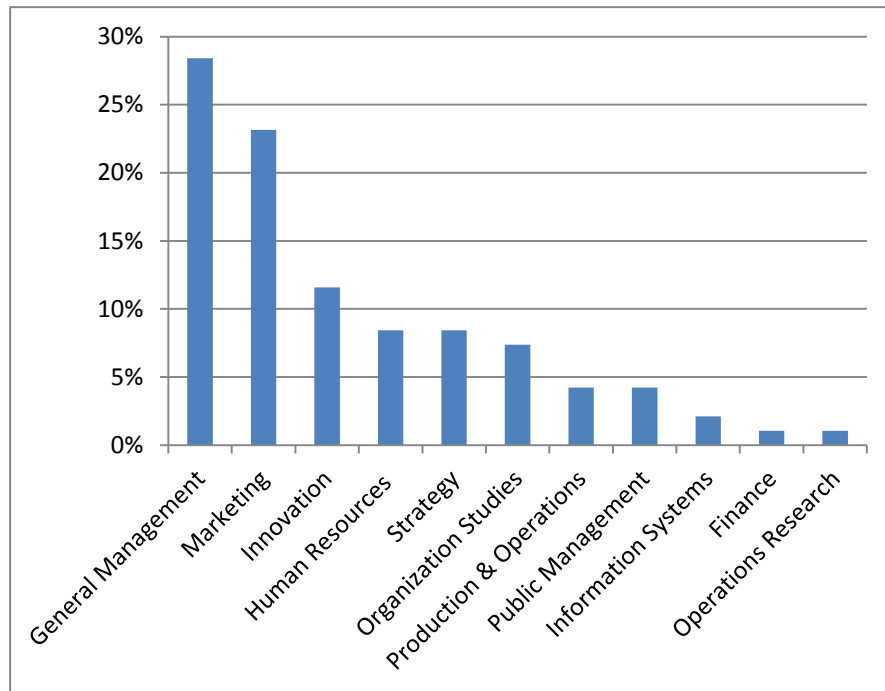


Figure 4. Organizational issues studied using QCA

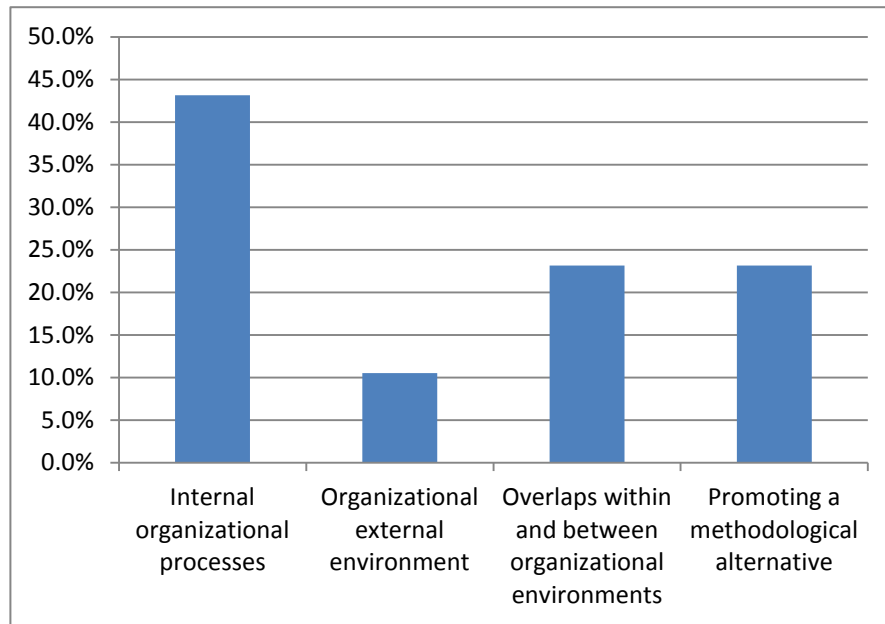
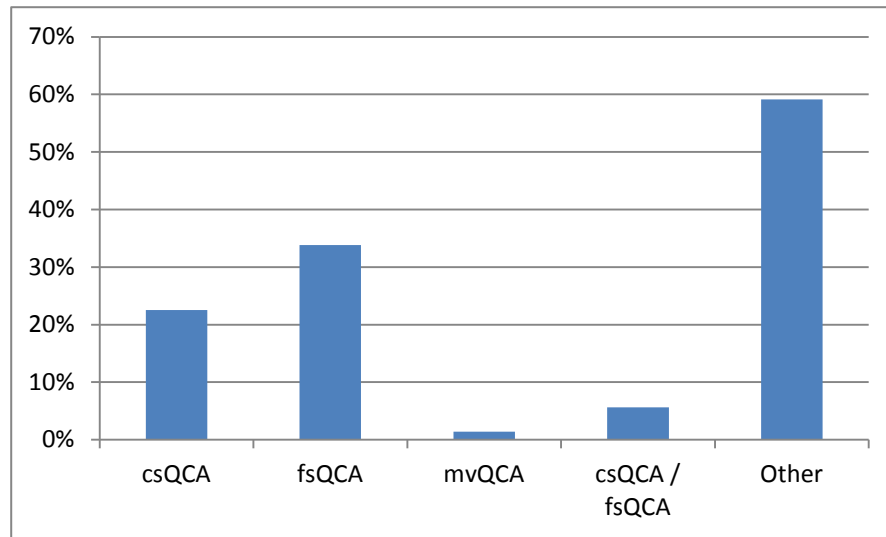
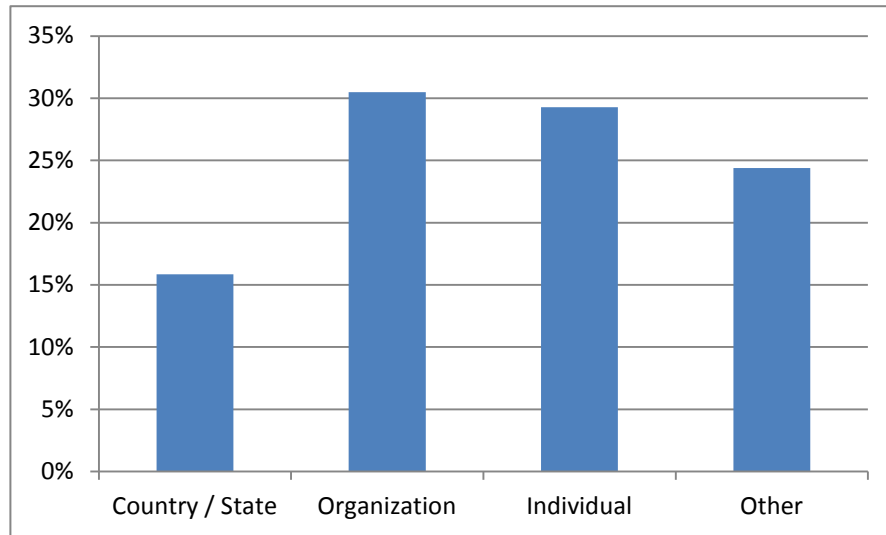


Figure 5. Use of QCA in management research



Notes: Other = Combination of crisp-set (csQCA) and / or fsQCA (fuzzy-set) with conventional methods. MvQCA= multi-value QCA

Figure 6. Unit of analysis



Notes: Other = Any other subject that does not fit in the three other categories (e.g., Stanko & Olleros, 2013; Young & Poon, 2013).